

TAXONOMIC STUDY OF THE AMERICAN
PLANTHOPPER GENUS *CYRPOPTUS*
(HOMOPTERA: FULGOROIDEA: FULGORIDAE)

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Abstract.—This study presents the first taxonomic revision of the American planthopper genus *Cyrpoptus*. Eleven species are treated. Two species are described as new: *ruficrus* from Cuba and *dubius* from Mexico. Plant associations are recorded. The distribution of the genus includes southern United States, Cuba, Mexico, and Central America. All critical diagnostic features are illustrated, and many new distributional records are included.

Within the United States species of the genus *Cyrpoptus* are striking fulgorids. Because of their relatively large size, reddish color, and occasional abundance, specimens are frequently submitted (by various workers concerned with plant-feeding insects) to the Systematic Entomology Laboratory for determination. The need to provide accurate and consistent names to specimens provided the impetus for this report.

At no time in the past were all of the species of *Cyrpoptus* studied as a unit. Species identification, of necessity based on inadequate individual descriptions, was too often uncertain or inaccurate. Dozier (1928:24) and Metcalf (1923:153) each proposed keys to the same relatively common three species, *C. belfragei* Stål, *C. nubeculosus* Stål, and *C. reinecke* Van Duzee. The keys of both authors employ characters which are either vague or lack adequate illustrations for clarification of the verbal presentation. In fairness to both Dozier and Metcalf, it should be stated that they depended heavily upon the literature with only limited study of specimens to form their ideas of species and their limits. In the course of the present study, reasonably good series of most of the species were assembled and types or lectotypes were studied and/or selected for all but one species, *C. obtusus* Valdes Ragues, the type of which was unavailable for study. All of the critical features used in the key are figured.

The economic significance of the included species is not established, but specimens of various species were taken on such diverse plants as lima beans, cotton, and pine.

Cyrpoptus Stål

Cyrpoptus Stål 1862:304. Type-species *Cyrpoptus suavis* Stål (monobasic) 1862:305.

Moderate sized to small fulgorids (10–16.5 mm); head in dorsal view about as broad as pronotum and broadly rounded to obtusely angular at apex;

coronal midlength equal to or greater than length near eyes; lateral coronal margins elevated, carinate, and slightly overlapping eyes; postocular area produced as short, blunt projection; coronal surface obliquely rugulose and/or weakly ridged; anterior coronal margin alternately light and dark due to series of variably defined small brown or black spots or patches; pronotum about 3× broader than long, declivant laterally, midline variably carinate, with evanescent longitudinal carina mesad of and posterior to each eye, surface rugulose; mesonotum subtriangular, declivant on lateral angles, surface rugulose and sometimes weakly ridged; pronotum and mesonotum each with pair of variably distinct small round impressions, pair on pronotum near transverse midline, pair on mesonotum closer to posterior angle than to transverse midline; forewings opaque basally and transparent distally, transparent portion usually with dark color pattern; hind wings mainly hyaline but usually yellow to red basally, colored portion variably bordered distally with black; face and crown separated by suture which decurves near eyes; frons quadrate, broadest apically, tapered toward base, lateral margins expanded at and concealing antennal bases, basal margin indented to receive clypeus; clypeus subtriangular, sides roundly expanded at base, then tapered to apex, discal portion in distal half often somewhat elevated; prothoracic femora dilated, mesothoracic femora similar, metathoracic femora not at all dilated. Male genitalia: pygofer, anal tube, and styles simple; aedeagus consisting of three pairs of inflatable lobes, each with or without apical elaborations.

Generic diagnosis.—The genus *Cyrpoptus* belongs to the subfamily Poiocerinae and tribe Poiocerini. It can be separated from all of the other genera in the tribe by the following combination of characters: the subequal widths of the head and pronotum, the blunt postocular projections, the pair of small round impressions on both the pro- and mesonotum, the dilated prothoracic femora, the (basally) opaque and (distally) transparent forewings, and the usually basally yellow to red hyaline hind wings.

Notes on the key and other comments.—The characters used in the key should work for either male or female specimens. The lengths given are the measurements taken with the wings at rest from the extreme coronal apex to the distal-most tips of the forewings. Generally, females are larger than males; but within most species, there is some overlap in size. At times one will find a large male associated with a small female, both representing the same species.

Structural features of the male genitalia, which provide the only consistent means of delimiting species in most of the families of the Fulgoroidea, appear to be of some value in the Fulgoridae or at least in the genus *Cyrpoptus*. The aedeagus consists of three pairs of inflatable lobes positioned in a vertical sequence. The shapes, lengths, and structural modi-

fications of these lobes vary interspecifically, and these differences can be seen by consulting the illustrations.

Key to Species of *Cyrpoptus*

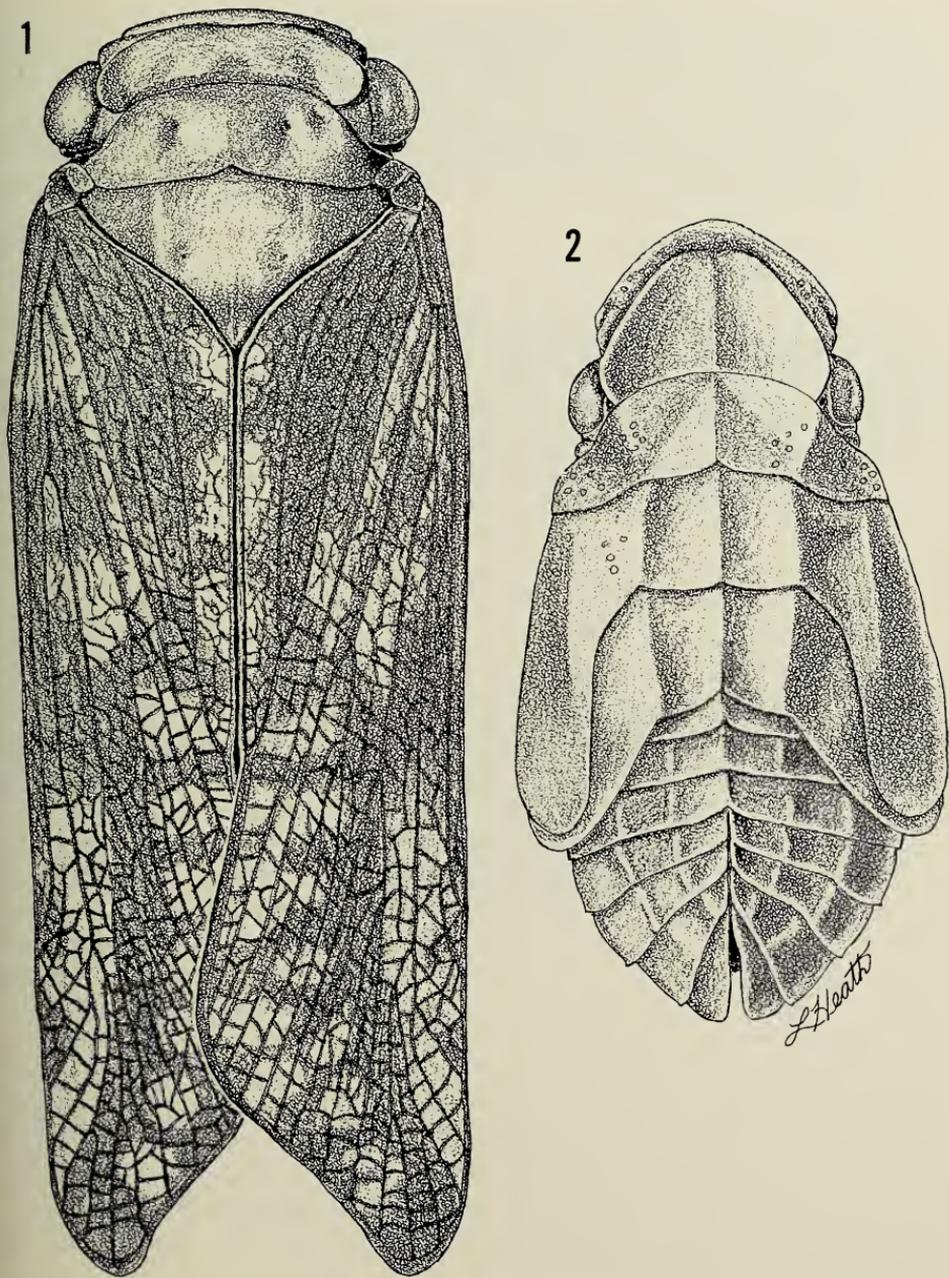
1. Pronotal carina behind inner margin of each eye strongly developed and nearly reaching posterior margin in dorsal view (Fig. 80) (distribution: Panama) *obscurus* Metcalf
- Pronotal carina behind inner margin of each eye essentially absent or only weakly developed in dorsal view (Figs. 1, 22, 30) 2
2. Crown and thoracic dorsum mottled with fuscus or black (Fig. 6), or legs with joint of femur and tibia reddish (distribution: Cuba) 3
- Crown and thoracic dorsum not so marked, legs not or rarely reddish as above (distribution: mainland America) 4
3. Crown and thoracic dorsum mottled with black or fuscus (Fig. 6), costal margin of forewing slightly concave near middle (Fig. 4), joint of femur and tibia with ground color stramineous *obtusus* (Valdes Ragues)
- Crown and thoracic dorsum with at most fine lighter and darker reticulate markings (Fig. 10), costal margin of forewing not concave near middle (Fig. 9), joint of femur and tibia with ground color reddish *ruficrus* n. sp.
4. Forewing with distal midline solidly darkened from apex to or almost to opaque basal portion (Figs. 15, 21) 5
- Forewing with distal midline not darkened, darkened only half distance to opaque basal portion (Fig. 38), or darkened irregularly and more extensively (Figs. 48, 57, 62) 6
5. Forewing distinctly narrowed subapically, its distal margin slightly sinuate (Figs. 1, 15) *suavis* Stål
- Forewing not distinctly narrowed subapically, its distal margin not sinuate (Figs. 20, 21) *belfragei* Stål
6. Forewing with distal portion not darkened, or lightly marked with dominant marking consisting of dark stripe on midline (Fig. 38) 7
- Forewing with distal portion extensively darkened (Fig. 48, 56, 65); or if lightly marked, dominant marking not dark stripe on midline (Fig. 29) 8
7. Crown distinctly produced at middle (Fig. 30), opaque basal portion of forewing with faint transverse band (Fig. 28), smaller species—males 11–12 mm, females 12–13.5 mm *metcalfi* Ball (in part)
- Crown not produced at middle (Figs. 39, 41), opaque basal portion of forewing not banded (Fig. 38), larger species—males 13–14 mm, females 14.5–16.5 mm *ferruginosus* Stål

8. Midline of crown darkened to form wide stripe or longitudinal band (Fig. 49), coronal length at middle $2\times$ or less length next to eyes *vanduzeei* Ball
- Midline of crown not so darkened or if vaguely as above, then coronal length at middle about $2\frac{1}{2}\times$ length next to eyes 9
9. Forewing extensively darkened distally, with distinct transparent oblique vitta from costal margin in apical portion reaching to or beyond midline (Figs. 56, 57) (distribution: So. Car., Fla., and Gulf States) *reinecke* Van D.
- Forewing extensively darkened distally or not, without transparent vitta as above (Figs. 28, 29) or vitta only vaguely indicated and not reaching to or beyond midline (Figs. 62, 65) (distribution: S Texas, western states, and Mexico) 10
10. Face in lateral view with convexity near middle (Fig. 31) or in full view with low irregular transverse ridge across middle; forewing with opaque basal portion palest at middle (Fig. 28) or entire forewing but little darkened (Fig. 29) *metcalfi* Ball (in part)
- Face in lateral or full view essentially smooth across middle (Figs. 67, 77); forewing not as above 11
11. Head in lateral view produced anteriorly for about $1\frac{1}{2}\times$ width of eye (Fig. 64); forewing with fewer hyaline areas (Fig. 62) *dubius* n. sp.
- Head in lateral view produced anteriorly for about $1\times$ width of eye (Figs. 67, 69, 73); forewing with more hyaline areas (Fig. 65) *nubeculosus* Stål

Cyrpoptus obscurus Metcalf
(Fig. 80)

Cyrpoptus obscurus Metcalf 1938:352.

Salient features.—Length of male 15 mm, female unknown. Crown roundly produced, longer at middle than next to eyes, surface irregularly rugulose, midline vaguely carinate; pronotum transversely rugulose, with carina on midline neither reaching anterior nor posterior margins, carina behind each eye well developed and reaching or nearly reaching posterior margin (Fig. 80); mesonotum with surface transversely rugulose; frons irregularly rugulose. Ground color stramineous washed with reddish; mesonotum with impressions and apex fuscus; veins of forewings pink or pinkish; each forewing with moderately distinct undulated brown stripe; stripe begins at midpoint of claval base, extends posteriorly to about midpoint of claval suture, then turns and extends to midpoint of discal portion, briefly continues posteriorly and evanesces; each hind wing, in-



Figs. 1-2. Dorsal habitus views. 1. *Cyrptus suavis* Stål, male from Costa Rica; 2. *Cyrptus nubeculosus* Stål, last instar nymph from Santa Rita Mts., Arizona.

cluding base, essentially hyaline; face darkest on discal portion; legs and abdominal venter mottled with various shades of brown to black.

Male genitalia.—Externally typical of genus, concealed portions not studied.

Type.—Holotype male, Barro Colorado Island, Canal Zone, 3 Dec. 1930, F. E. Lutz. Repository of holotype: American Museum of Natural History, New York City.

Records.—Known only from the type.

Notes.—The complete longitudinal carina behind each eye on the pronotum and the undulated brown stripe on each forewing provide the distinctive features of *obscurus*. In addition, this species differs from all other *Cyrpoptus* by the lack of differentiation between the basal and distal portions of the forewings and the lack of pigmentation at the bases of the hind wings.

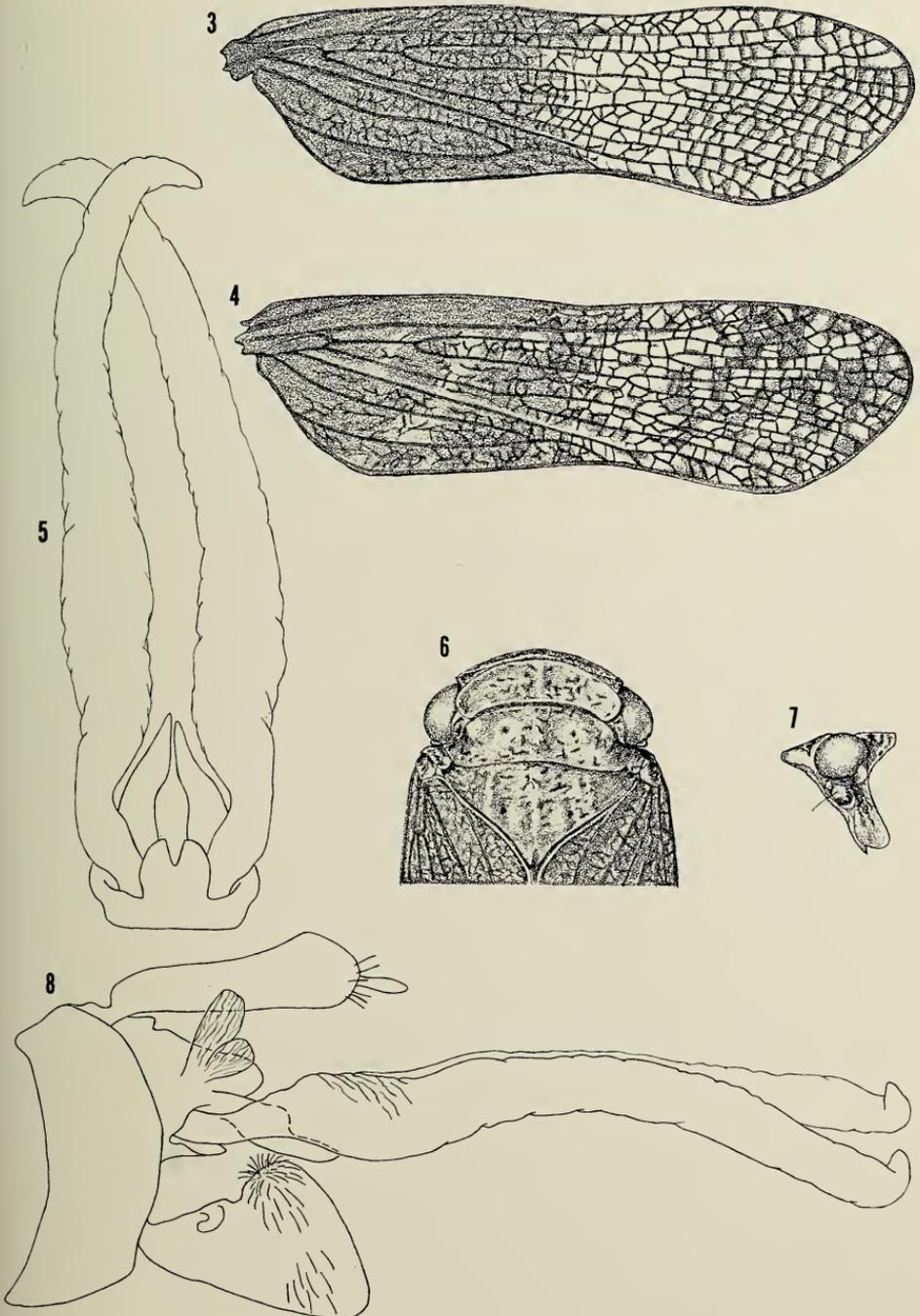
Cyrpoptus obtusus (Valdes Ragues)
(Figs. 3-8)

Caliptoprotus obtusus Valdes Ragues 1910:442.

Salient features.—Length of male 10–11.2 mm, females 10–11.5 mm. Crown roundly produced, length at middle and next to eyes about subequal, surface longitudinally rugulose or obliquely so; pronotum irregularly rugulose, usually with weakly defined median longitudinal carina, carina behind each eye poorly developed or absent (Fig. 6); mesonotum more or less transversely rugulose; frons longitudinally rugulose, in lateral view (Fig. 7) contour slightly irregular; costal margins of forewings indented near middle (Figs. 3–4). Ground color sordid stramineous to light brown, sometimes lightly washed with reddish; crown, pronotum, and mesonotum mottled with fuscus to black (Fig. 6); impressions on pronotum and mesonotum dark; opaque basal portions of forewings reddish with cells lightly to heavily fuscus; hyaline distal portions of forewings with dark pattern variable either quite light (Fig. 3), or moderately heavy with distinct pattern (Fig. 4); each hind wing red at base with red portion bordered distally with brown to black; face, legs, and abdominal venter mottled with various shades of brown to black, upper portion of face often with pair of irregular black areas on line between antennae.

Male genitalia.—Distinctive features: ventral lobes exceedingly long, about 7× mesal width of pygofer in lateral view (Fig. 8), ventral lobes in ventral view crossing near apices (Fig. 5).

Type.—Status uncertain. Valdes Ragues' (1910:442) description and type selection consists of one line: "*Caliptoprotus obtusus*, 10 mm., idem rojizo, 77." Two lines below he lists another specimen with "como el numero 77" with the number 182. These specimens are presumably in the Gundlach Collection in Havana, Cuba. Eventually a lectotype should be



Figs. 3-8. *Cyrpoptus obtusus* Valdes Ragues. 3. Forewing, light form; 4. Forewing, dark form; 5. Aedeagus in ventral view; 6. Anterior dorsum; 7. Head in lateral view; 8. Complete male genitalia in lateral view.

selected if either specimen is still extant. This species is often found determined in collections with Uhler credited as the author of *obtusus*, but Uhler's description was never published.

Records.—CUBA, Alquizar, Banes, Barrio Caobilla, C. Baraqua, Cabanas, Camaguey, Cayamas, Cristo Oriente, Guane, Habana, Jaronu, Jobabo, La Gloria, P. Soriano, Pinar Rio, Preston, Ruspoli, Santa Cruz de los Pinos, Santiago de las Vegas, San Vicente, Soledad, Trinidad, Vinales, and Wajay. Total specimens studied: 38 males and 34 females.

Notes.—The darkly mottled crown, pronotum, and mesonotum plus the concave area near the middle of each forewing make this species one of the most distinctive in the genus. *C. obtusus* is known only from Cuba with few plant associations. It has been taken on wild tobacco, *Glircidia* sp., "guama" and "mogote de la bandera."

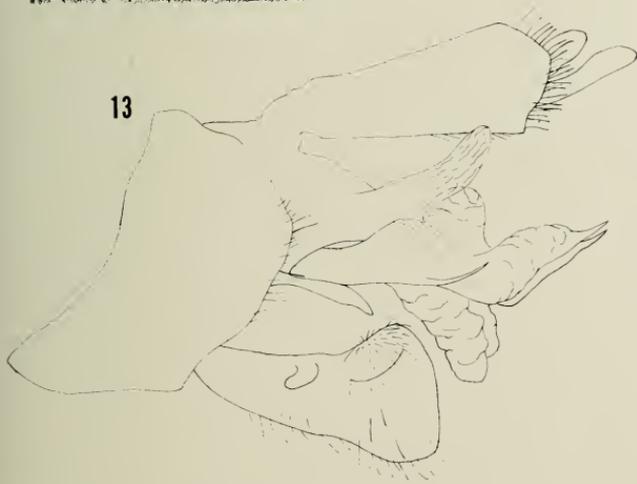
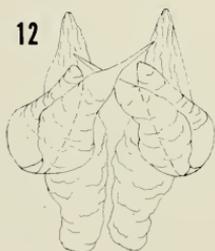
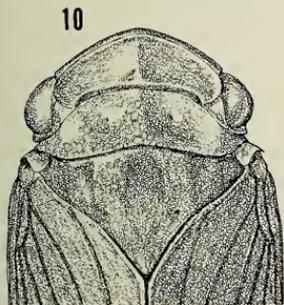
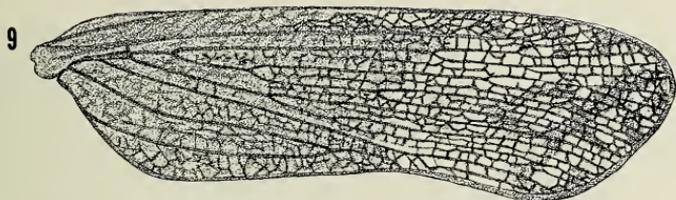
Cyrpoptus ruficrus Kramer, n. sp.

(Figs. 9–14)

Salient features.—Length of male 10–11.5 mm, female 10.75–12.1 mm. Crown bluntly angular at apex, length at middle greater than length next to eyes, surface longitudinally rugulose or obliquely so, midline often weakly carinate; pronotum irregularly rugulose, midline with variably distinct carina, without carina behind each eye (Fig. 10); mesonotum more or less transversely rugulose; frons longitudinally rugulose, in lateral view (Fig. 11) contour slightly concave; costal margin of forewings not indented near middle (Fig. 9). Ground color stramineous to light brown; crown, pronotum, and mesonotum sometimes washed with reddish, rarely with fine brown reticulations in heavily pigmented specimens; impressions on pronotum and mesonotum dark; opaque basal portions of forewings reddish with cells variably fuscus; distal portions of forewings with dark pattern varying from well-developed (Fig. 9) to absent; each hind wing orange at base with orange portion bordered distally with brown or black; face, legs, and abdominal venter scarcely to rather heavily mottled with shades of brown to black; face and joints of femur and tibia pink to red.

Male genitalia.—Distinctive features: ventral lobes longest, their apices slender and needle-like (Figs. 12–14, from holotype).

Types.—Holotype male (USNM 75434), "Vinales, Cuba, April 15, 1930. S. C. Bruner, taken on trunk of *Pinus tropicalis* Moric." Paratypes: 1♂, 1♀ 12½ K. s. Pinar Rio, 12 Sept. 1913; 1♂, 1♀ Herradura, 16 March 1925, H. Osborn; 1♀ Herradura 16 Feb. 1924, H. Osborn; 1♀ Cerro Cabras near P. de R., 11 Sept. 1913; 1♂ Isla de Pines, 1923, C. H. Ballou; 1♀ Isla de Pines, 25 July 1923, C. H. Ballou; 1♀ Isla de Pines, Feb. 1923, C. H. Ballou; 1♀ Isla de Pines, 9–10 March 1939, S. C. Bruner; 1♀ L. Pelado, Cajalbana, P. del R., 1 Feb. 1951, J.A.



Figs. 9-14. *Cyrptoptus ruficrus*, n. sp. 9. Forewing; 10. Anterior dorsum; 11. Head in lateral view; 12. Aedeagus in posterior view; 13. Complete male genitalia in lateral view; 14. Aedeagus in ventral view.

Notes.—This species and *obtusus* are quite similar to the unaided eye. Both are known only from Cuba and comprise the only two species recorded from the islands of the Caribbean. The dark mottling on the crown and thoracic dorsum which is present in *obtusus* and absent in *ruficrus* will serve to separate most specimens of the two species. Heavily pigmented examples of *ruficrus* can be separated from *obtusus* by the non-indented costal margin of the forewing (compare Fig. 9 with Figs. 3 and 4).

Osborn (1926:354) reported this species as *C. belfragei* Stål from specimens he collected "on needles of long leafed Cuban pine." The economic significance of this planthopper is not established, but "pine" is the only plant from which specimens are recorded. The species name, a Latin noun in apposition, means red legs.

Cyrpoptus suavis Stål
(Figs. 1, 15-19)

Cyrpoptus suavis Stål 1862:305.

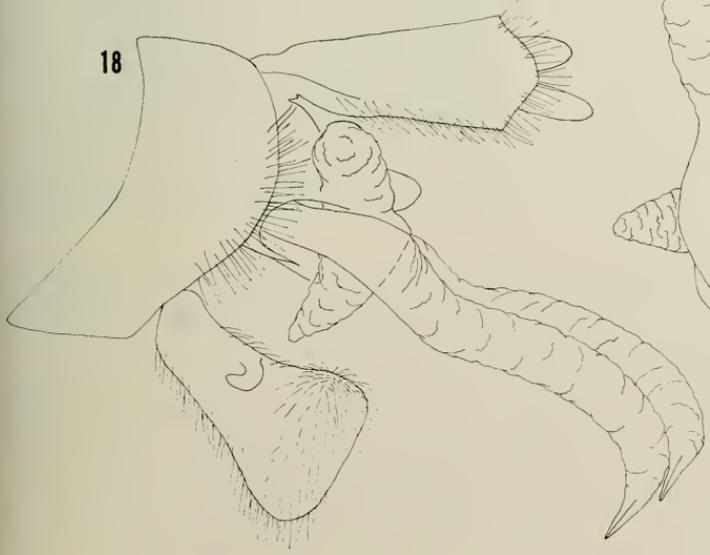
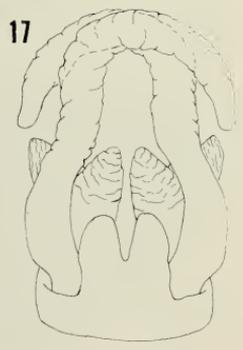
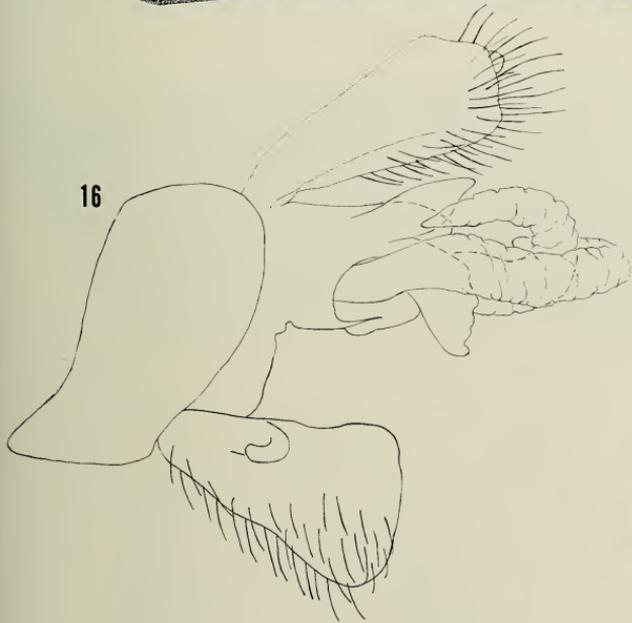
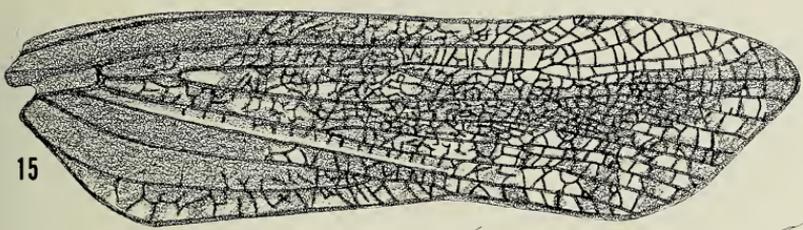
Salient features.—Length of male 10.5-13 mm, female 11.5-14.5 mm. Crown broadly rounded on anterior margin, length at middle and next to eyes about equal, surface irregularly rugulose, midline not carinate; pronotum transversely rugulose, longitudinal midline sometimes subcarinate, hind margin variably notched at middle, carina behind each eye essentially absent (Fig. 1); mesonotum mainly transversely rugulose, frons longitudinally rugulose or obliquely so, in lateral view not concave but with upper edge thick; forewing in broad view (Fig. 15) narrowed subapically with oblique distal margin slightly sinuate. Ground color stramineous to light brown; crown, pronotum, and mesonotum in paler specimens variably peppered with exceedingly minute red dots, in darker specimens these areas suffused with various shades of brown and without red color, intermediates exist between these extremes; impressions on pronotum and mesonotum usually darkened; opaque basal portions of forewings reddish with cells variably fuscus; distal midline of each forewing darkened to or nearly to opaque basal portion (Figs. 1 & 15); each hind wing orange or red at base with colored portion bordered distally with black or brown; frons and thoracic pleura marked like crown; distal half of clypeus, legs, and abdominal venter variably mottled with black or brown.

Male genitalia.—Distinctive features: ventral lobes long, slightly more than 3× width of pygofer in lateral view (Fig. 18). Figs. 16-17 show partly inflated genitalia, and Figs. 18-19 show fully inflated genitalia.

Type.—No lectotype selected. Stål mentioned only a female in the original description, but this specimen could not be located in the Riksmuseum in Stockholm. I have before me one male from that museum representing *suavis* with 6 labels: "Mexico" and "Boucard" and "paratype" (red

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Figs. 15-19. *Cyrpoptus suavis* Stål. 15. Forewing; 16. Complete male genitalia in lateral view, aedeagus partly inflated; 17. Aedeagus in ventral view, partly inflated; 18. Complete male genitalia in lateral view, aedeagus fully inflated; 19. Aedeagus in ventral view, fully inflated.



label) and "210 54" (red label) and "Riksmuseum Stockholm" and "47 26" (red label).

Records.—BRITISH HONDURAS, Punta Gorda; CANAL ZONE, Ancom, Cristobal, Ft. Kobbe, Tobago Island; COSTA RICA, Arenal, Golfito, La Caja, Piedras, Puntarenas, Tinaja, Turrialba; GUATEMALA, Morales, Pancajche; MEXICO: CHIAPAS, Laguna Montebello, Taxla Gutierrez; GUERRERO, Chilpancingo; NAYARIT, Compostela, San Blas; OAXACA, Suchilapa, Zantepec; VERACRUZ, Catemaco, Coyame. Jesus Carranza, Los Cocos, Orizaba. Total specimens studied: 28 males and 21 females.

Notes.—In addition to the features noted in the key, the short crown will further help to distinguish this species. *C. suavis* has a wide distribution in Mexico and Central America, but no plant associations are recorded.

Cyrpoptus belfragei Stål

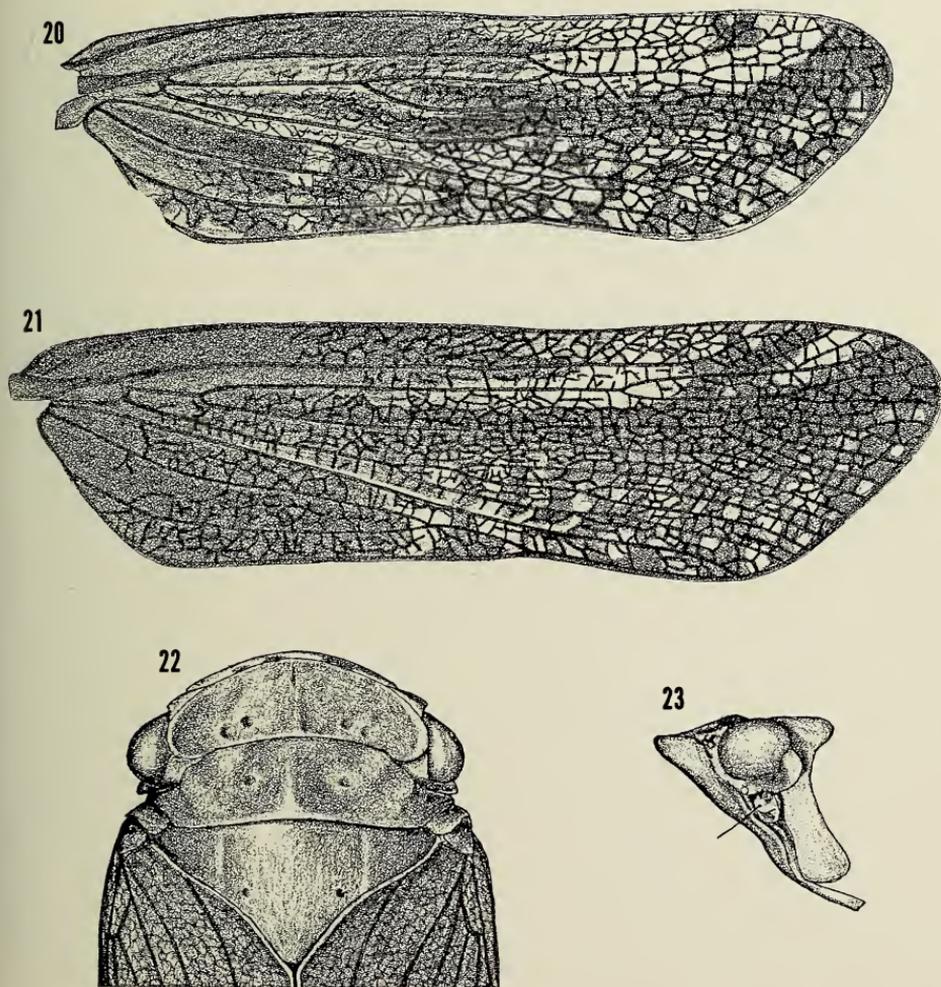
(Figs. 20-27)

Cyrpoptus belfragei Stål 1869:240.

Salient features.—Length of male 11.5-14 mm, female 14-16 mm. Crown rounded on anterior margin, length at middle greater than next to eyes, surface irregularly rugulose, midline not carinate; pronotum transversely rugulose, longitudinal midline sometimes weakly carinate, hind margin at times weakly notched at middle, carina behind each eye only partly developed (Fig. 22); frons longitudinally rugulose, in lateral view (Fig. 23) not concave with upper margin moderately thick; forewing in broad view (Figs. 20-21) narrowed toward apex with oblique distal margin not sinuate. Ground color stramineous to yellowish brown; crown, pronotum, and mesonotum usually peppered with exceedingly minute red dots and variably suffused with brown or black; impressions on pronotum and mesonotum dark; opaque basal portions of forewings reddish with cells variably fuscus; distal midline of each forewing darkened to or nearly to opaque basal portion (Figs. 20-21); each hind wing red at base with red portion bordered distally with black; frons and thoracic pleura marked like crown; distal half of clypeus, legs, and abdominal venter variably mottled with brown or black.

Male genitalia.—Distinctive features: ventral lobes long, about 3× width of pygofer in lateral view (Figs. 24 & 26). In ventral view (Figs. 25 & 27), ventral lobes either crossing apically or not.

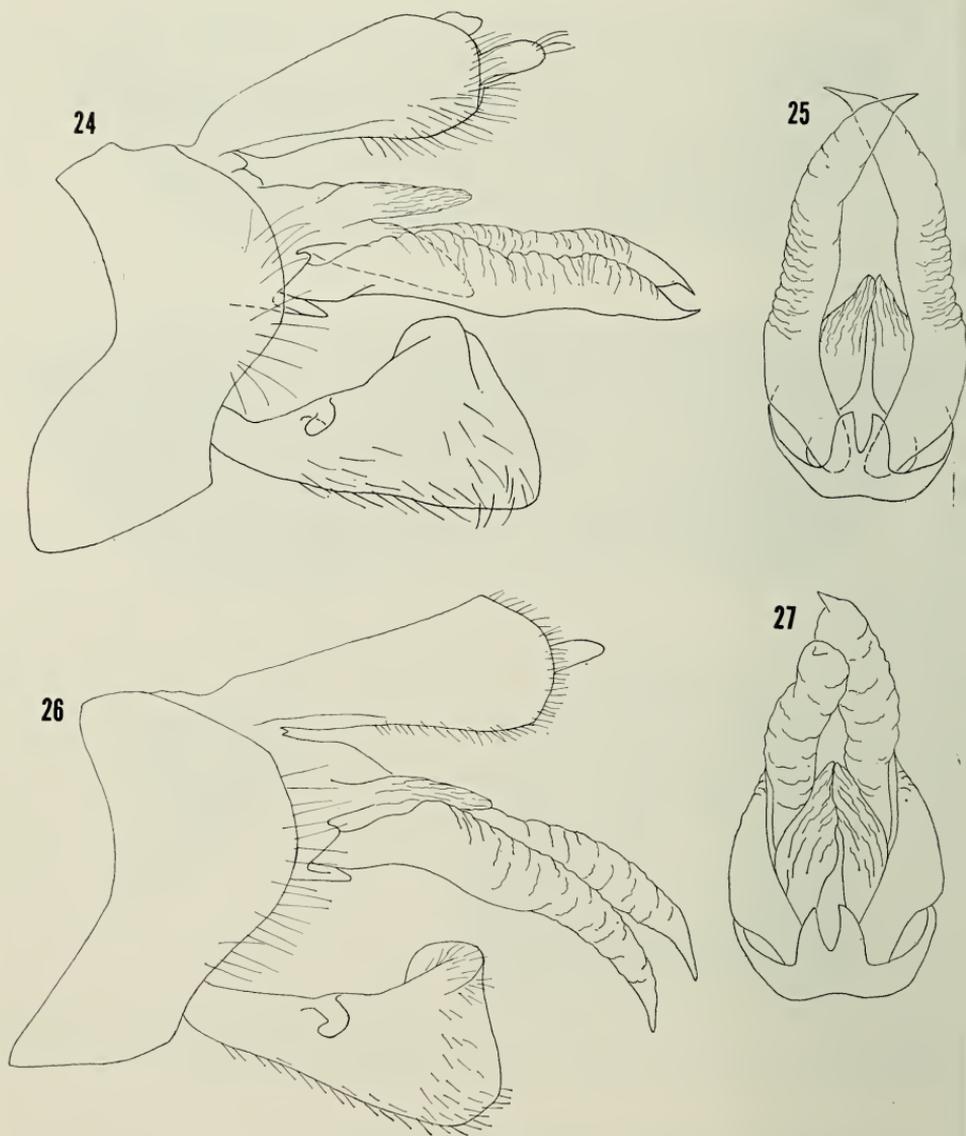
Type.—Lectotype female hereby selected has 7 labels: "Texas" and "Belfrage" and "Typus" (red paper) and "Cyrpoptus belfragei Stål" and "456 63" (red paper) and "44 76" (red paper) and "Riksmuseum Stockholm" (green paper). The specimen is mounted with all wings spread. Except for a tiny piece missing from the apex of the right forewing, the lectotype is perfect. There is a second conspecific female with data similar to the



Figs. 20-23. *Cyrpoptus belfragei* Stål. 20. Forewing, from co-type; 21. Forewing, female from So. Carolina; 22. Anterior dorsum; 23. Head in lateral view.

lectotype and bearing a paratype label (red paper). Both specimens are in the Riksmuseum Stockholm.

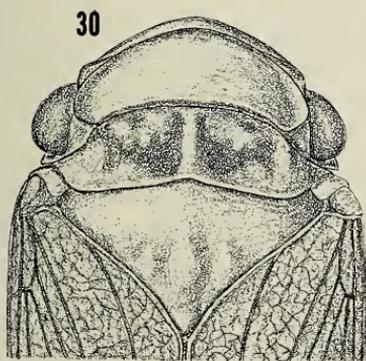
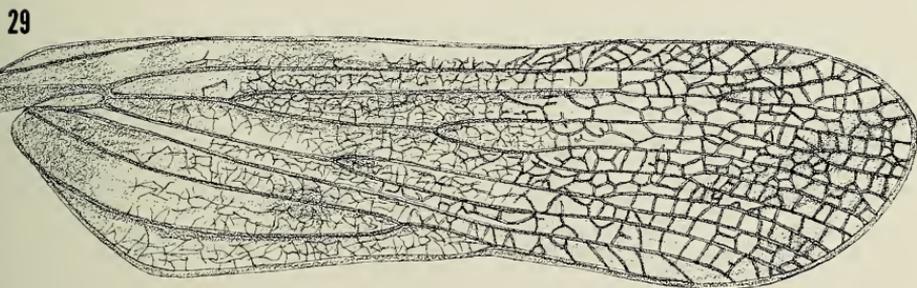
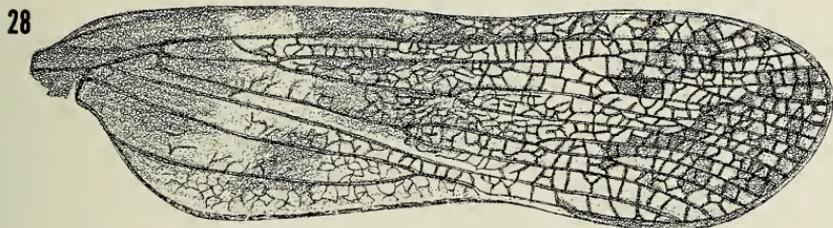
Records.—ALABAMA, Oak Grove; FLORIDA, Apalachicola Nat. Forest, Gainesville, La Belle, St. John's Bluff, Sanford, Sebring, Tall Timbers Research Station, Tampa, Torreya St. Park; KANSAS, Labette Co., Pottawatomie Co.; MARYLAND, Beltsville, Chesapeake Beach; MISSISSIPPI, Biloxi, Ocean Springs; MISSOURI, Columbia, Joplin, St. Louis; NORTH CAROLINA, Raleigh, Southern Pines, Wrightsville; SOUTH CAROLINA, Florence; TENNESSEE, Chattanooga; TEXAS, Kerr Co.; VIRGINIA,



Figs. 24-27. *Cyrpoptus belfragei* Stål. 24 & 26. Complete male genitalia in lateral view; 25 & 27. Aedeagus in ventral view.

Arlington, Falls Church, Fort Monroe, Great Falls, Vienna. MEXICO, Campeche, San Luis Potosi; HONDURAS, Trujillo. Total specimens studied: 22 males and 33 females.

Notes.—*C. belfragei* is widely distributed in the southeastern United States. Osborn (1938:286) recorded this species from two counties in southern Ohio, and I have studied specimens from as far west as Kansas and



Figs. 28-31. *Cyrpoptus metcalfi* Ball. 28. Forewing, darker form; 29. Forewing, lighter form; 30. Anterior dorsum; 31. Head in lateral view.

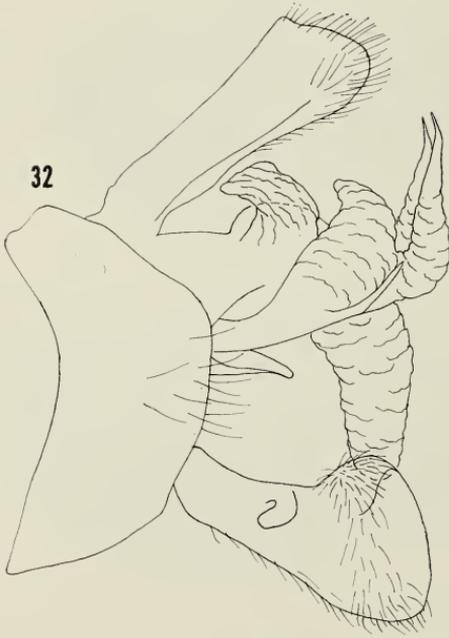
Texas. The species also occurs in Mexico and Honduras, but in these countries it is largely replaced by *suaavis*.

Cyrpoptus metcalfi Ball
(Figs. 28-37)

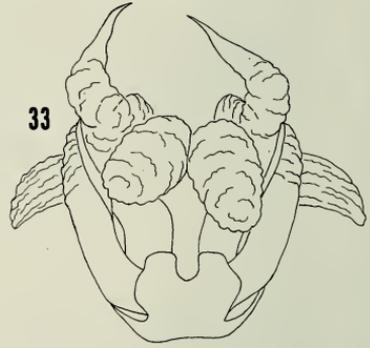
Cyrpoptus metcalfi Ball 1933:147.

Salient features.—Length of male 11-12 mm, female 12-13 mm. Crown angularly rounded on anterior margin, length at middle greater than next to eyes, longitudinal midline sometimes vaguely depressed, surface longi-

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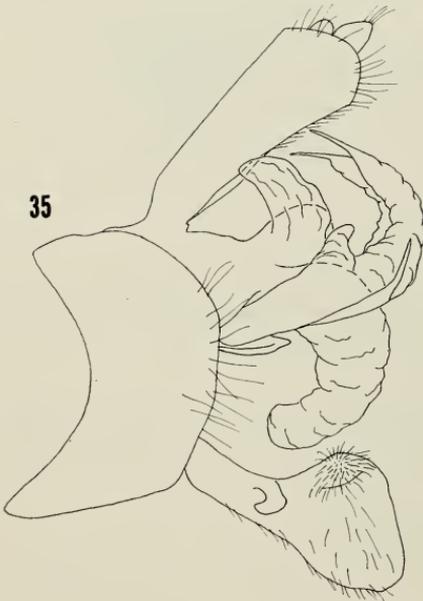
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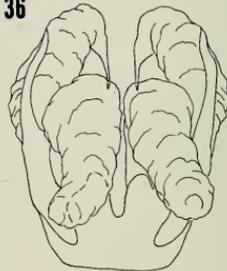
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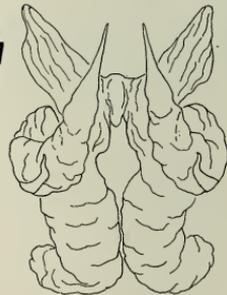
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tudinally rugulose; pronotum transversely rugulose, longitudinal midline weakly carinate on central half, carina behind each eye scarcely developed (Fig. 30); mesonotum transversely rugulose; frons longitudinally rugulose, in lateral view (Fig. 31) broadly concave with variable elevation at middle; forewing in broad view (Figs. 28–29) narrowest beyond middle with apex narrowly rounded. Ground color stramineous or sordid stramineous; crown, pronotum, and mesonotum usually peppered with exceedingly minute red dots, these at times obliterated with brown or black suffusion; impressions on pronotum and mesonotum dark or not; opaque basal portion of forewings peach-colored and at times suffused with brown, with variable paler transverse patch across middle; distal portion of forewings varying from essentially unmarked to patterned with brownish (Figs. 28–29); each hind wing yellow or yellow-orange at base with colored portion partly bordered with brown; frons and thoracic pleura marked like crown; distal half of clypeus, legs, and abdominal venter variably mottled with brown or black.

Male genitalia.—Distinctive features: ventral lobes upturned near middle with apices narrowed and needle-like in lateral view (Figs. 32 & 35). In ventral and posterior views (Figs. 33–34, 36–37), apices of ventral lobes directed mesad.

Type.—Holotype female, Yuma, Arizona, 25 August 1929, E. D. Ball. The allotype male is mounted on the same pin with the holotype. These and the 14 paratypes mentioned in the original description are in the USNM.

Records.—ARIZONA, Granite Reef Dam, Phoenix, Sacaton, San Louis, Somerton, Yuma; CALIFORNIA, Bard, Calipatria, Coachella, Death Valley, El Centro, Holtville, Indio, Potholes, Thousand Palms Oasis, Westmorland; NEVADA, Glendale, Overton. MEXICO: SONORA, Hermosillo; SINALOA, Los Mochis. Total specimens studied: 67 males and 36 females.

Notes.—*C. metcalfi* is apparently a fairly common species in the southwestern portion of the United States and adjacent portions of Mexico. The only recorded plants from which specimens were taken are *Strombocarpa odorata* Torr. and *Pluchea sericea* (Nutt.).

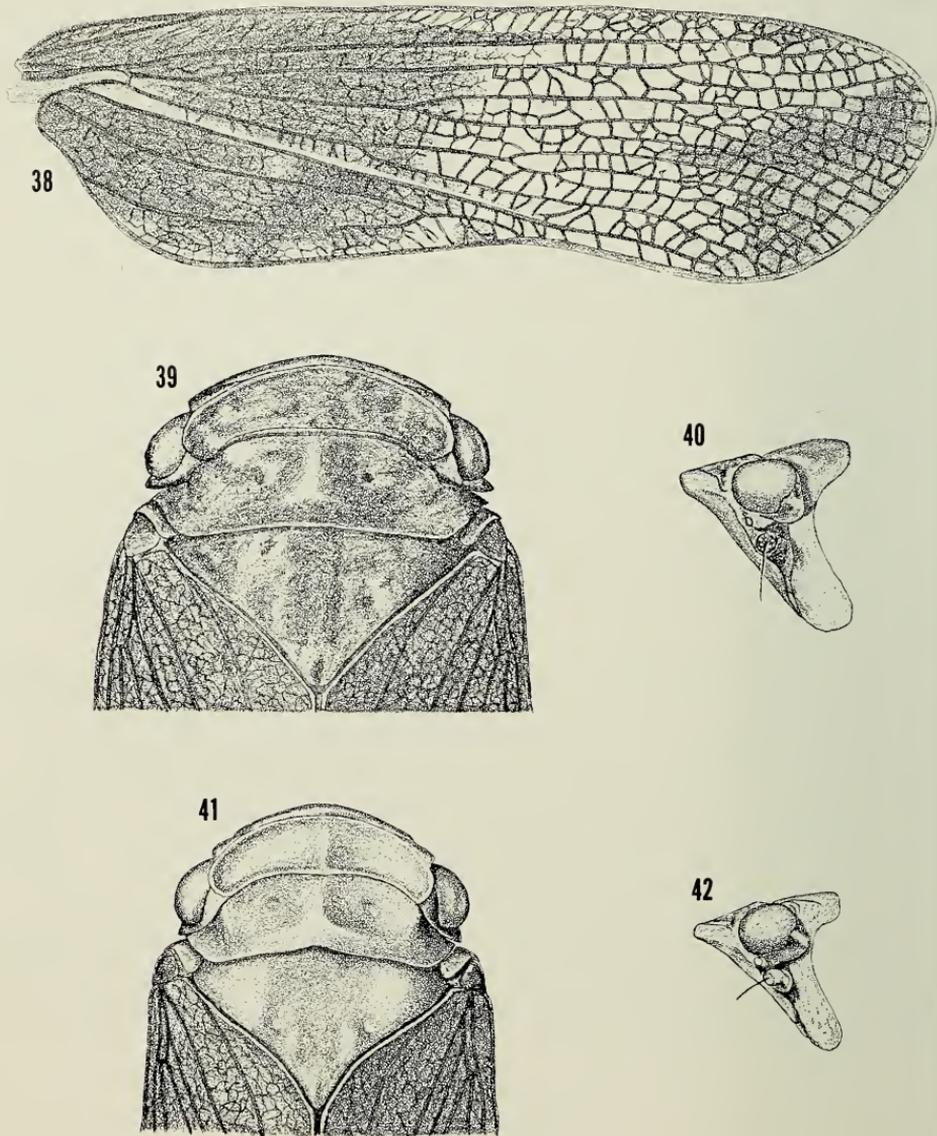
Cyrpoptus ferruginosus Stål
(Figs. 38–47)

Cyrpoptus ferruginosus Stål 1869:240.

Salient features.—Length of male 13–14 mm, female 14.5–16.5 mm. Crown broadly rounded on anterior margin, length at middle slightly ex-

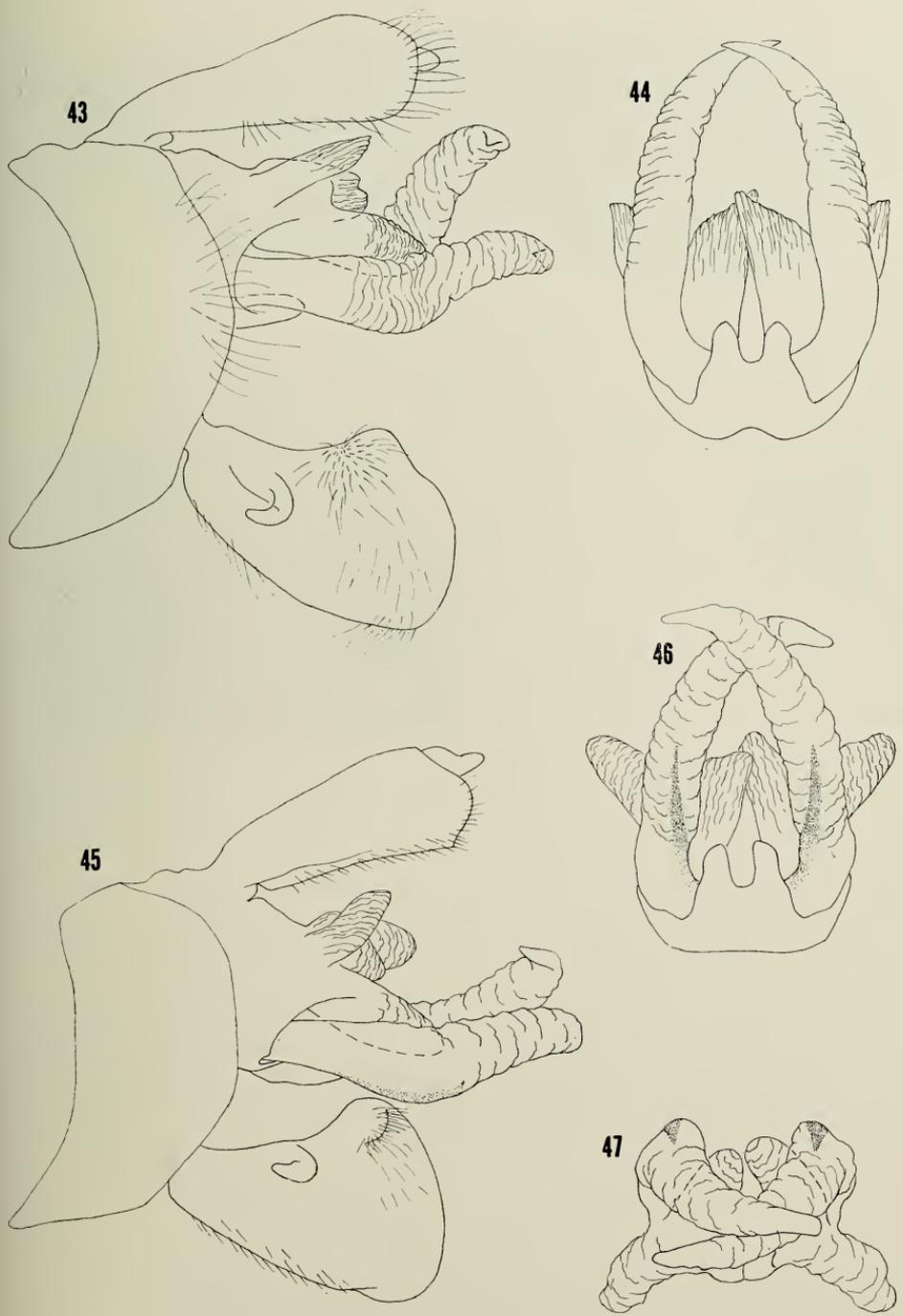
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Figs. 32–37. *Cyrpoptus metcalfi* Ball. 32 & 35. Complete male genitalia in lateral view; 33 & 36. Aedeagus in ventral view; 34 & 37. Aedeagus in posterior view.



Figs. 38–42. *Cyrryoptus ferruginosus* Stål. 38. Forewing of female; 39. Anterior dorsum of female; 40. Head of female in lateral view; 41. Anterior dorsum of male; 42. Head of male in lateral view.

ceeding that next to eyes, surface longitudinally rugulose; pronotum transversely rugulose, longitudinal midline usually no more than weakly carinate, carina behind each eye only partly developed (Figs. 39 & 41), mesonotum transversely rugulose; frons longitudinally rugulose, in lateral view (Figs.



Figs. 43-47. *Cyrpoetus ferruginosus* Stål. 43 & 45. Complete male genitalia in lateral view; 44 & 46. Aedeagus in ventral view; 47. Aedeagus in posterior view.

40 & 42) scarcely concave with upper margin thick; forewing in broad view (Fig. 38) with costal margin not indented, without structurally unique features. Ground color sordid stramineous to brownish; crown, pronotum, and mesonotum peppered with exceedingly minute red dots, these at times obliterated or partly so with darker shading; impressions on pronotum and mesonotum darkened or not; opaque basal portion of forewings usually dark sordid reddish, but in lightly pigmented males this area orange or dusky orange; in males distal portion of forewings typically not darkened, in females distal portion of forewings with dominant marking incomplete dark stripe on midline (Fig. 38); each hind wing red (typical) to yellowish (pale males) at base with colored portion partly bordered with brown; frons and thoracic pleura marked like crown; distal half of clypeus, legs and abdominal venter variably mottled with brown or black.

Male genitalia.—Distinctive features: ventral lobes weakly or not upturned distally with apices flattened and sharply subtriangular in lateral views (Figs. 43 & 45). In ventral and posterior views (Figs. 44, 45–47) apices of ventral lobes crossed distally.

Type.—Lectotype female hereby selected has 7 labels: "Mexico" and "Salle" and black square of paper and handwritten "Cyrproptus (sic) ferruginosus Stål" and red label "211 59" and green label "Riksmuseum Stockholm" and red label "46 76." The specimen is mounted with all wings spread. The tip of the right forewing is missing and a small piece is broken from the left forewing on the posterior margin at the apex. The hind wings are missing small pieces from their apical margins. Stål mentioned only a female in the original description with a length of 11 mm and wing expanse of 32 mm. The lectotype fits this size exactly. A male with similar data and labelled "Cyrproptus (sic) ferruginosus Stål" bearing a red typus label is obviously in error. This male is in fact an example of *nubeculosus*. Both specimens are in the Riksmuseum Stockholm.

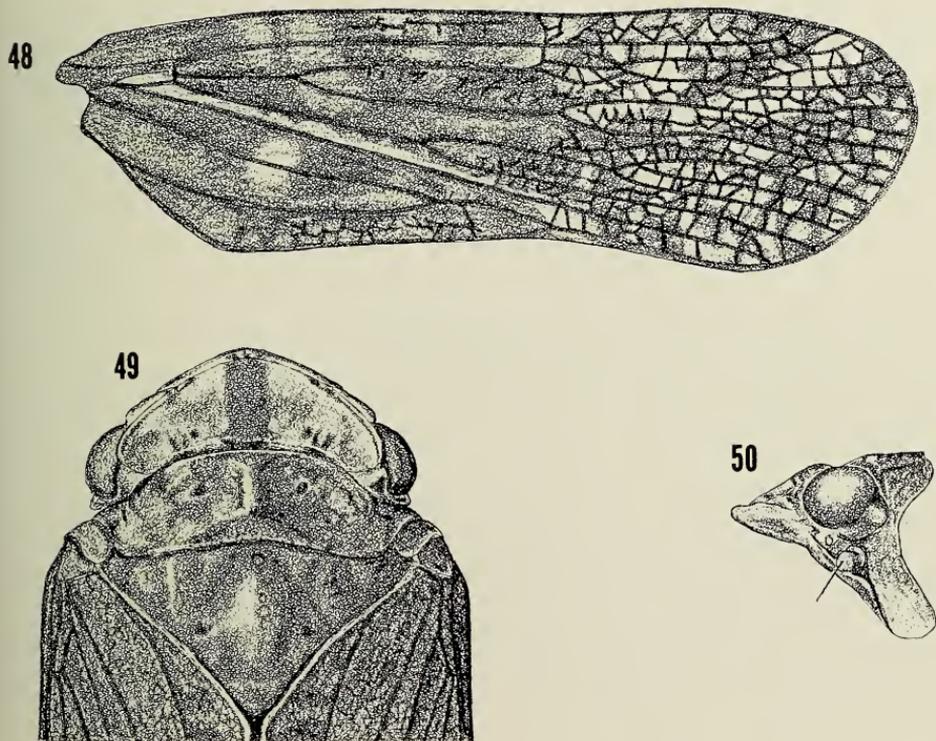
Records.—MEXICO: MORELOS, Cuautla, Cuernavaca. Total specimens studied 7 males and 16 females.

Notes.—This is one of the more robust members of the genus. The short crown and sexually dimorphic differences in the pattern of the apical portion of the forewings provide the distinctive features of the species. No plant associations are recorded for this species which is presently known only from the Mexican State of Morelos.

Cyrproptus vanduzeei Ball
(Figs. 48–55)

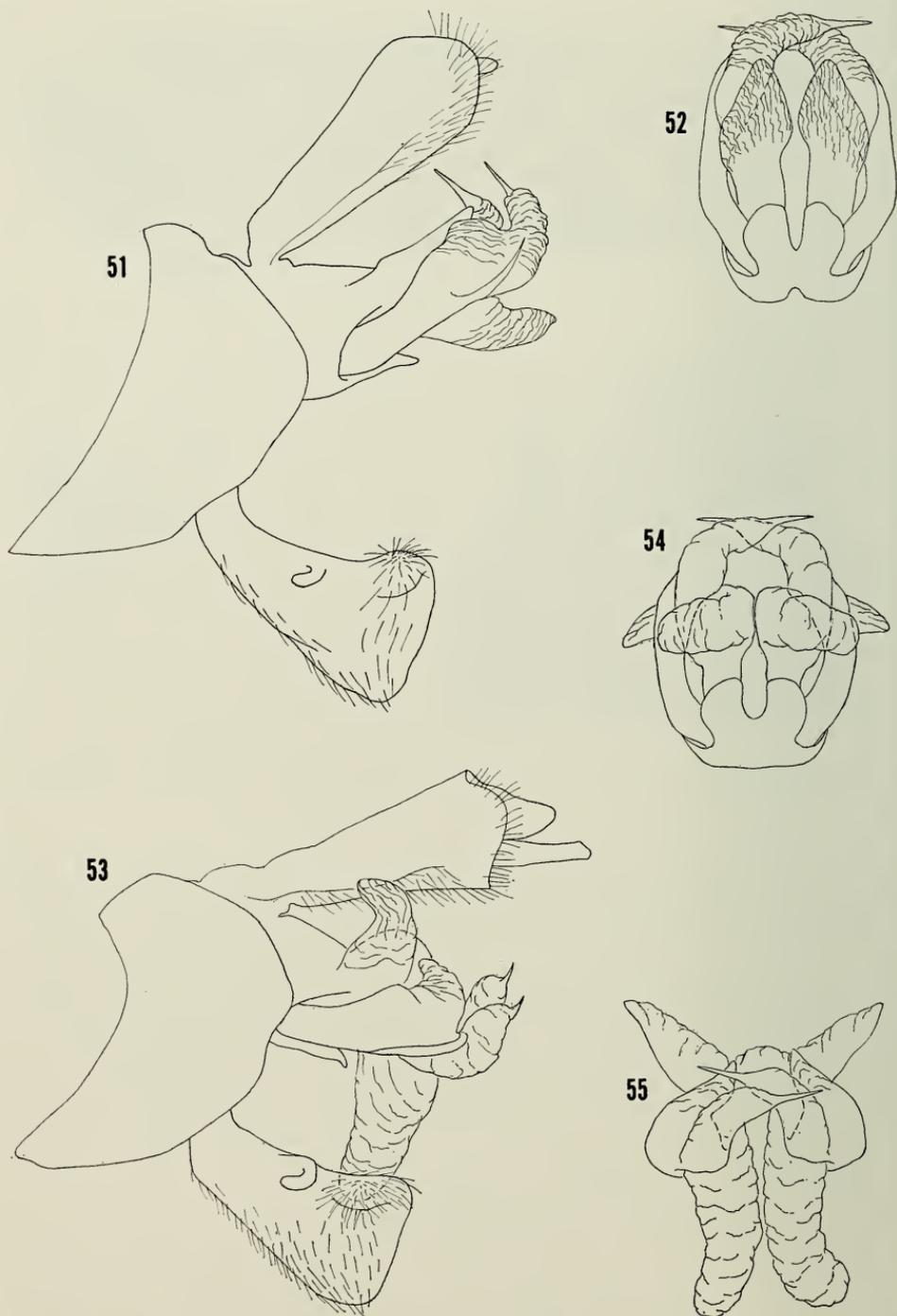
Cyrproptus vanduzeei Ball 1933:146.

Salient features.—Length of male 10–11.5 mm, female 11–13.5 mm. Crown triangularly or subtriangularly produced with midlength about twice length



Figs. 48–50. *Cyroptus vanduzeei* Ball. 48. Forewing; 49. Anterior dorsum; 50. Head in lateral view.

next to eyes, surface longitudinally rugulose, longitudinal midline variably depressed; pronotum transversely rugulose, longitudinal midline carinate, carina rarely reaching anterior margin and never reaching posterior margin, carina behind each eye only partly developed (Fig. 49); mesonotum transversely rugulose; frons longitudinally rugulose, with poorly defined transverse ridge across middle and single short longitudinal ridge on each side of extreme apex, in lateral view (Fig. 50) frons angular with upper edge thick but somewhat tapered toward apex; forewing in broad view (Fig. 48) narrowest beyond middle and rounded apically. Ground color sordid stramineous or light brown; crown, pronotum, and mesonotum peppered with exceedingly minute red dots, these partly or entirely obscured by variable dark brown to black suffusion, longitudinal midline of crown darkened (Fig. 49); impressions on pronotum and mesonotum dark; opaque basal portion of forewing dark reddish and variably mottled with black, hyaline distal portion of forewings irregularly mottled with dark brown to black (Fig. 48); each hind wing at base red to scarlet with colored



Figs. 51-55. *Cyryptoptus vanduzeei* Ball. 51 & 53. Complete male genitalia in lateral view; 52 & 54. Aedeagus in ventral view; 55. Aedeagus in posterior view.

portion partly bordered with brown; frons and thoracic pleura marked like crown; distal half of clypeus, legs, and abdominal venter strongly mottled with brown to black.

Male genitalia.—Distinctive features: ventral lobes upturned distally with apices slender and needlelike in lateral views (Figs. 51 & 53). In ventral and posterior views (Figs. 52, 54, & 55) apices of ventral lobes crossed distally.

Type.—Holotype female Baboquivari Mts., Arizona, 11 April 1932, E. D. Ball in U.S. National Museum.

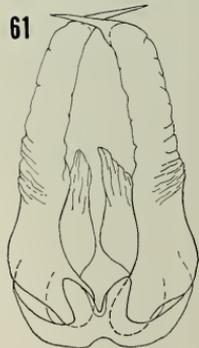
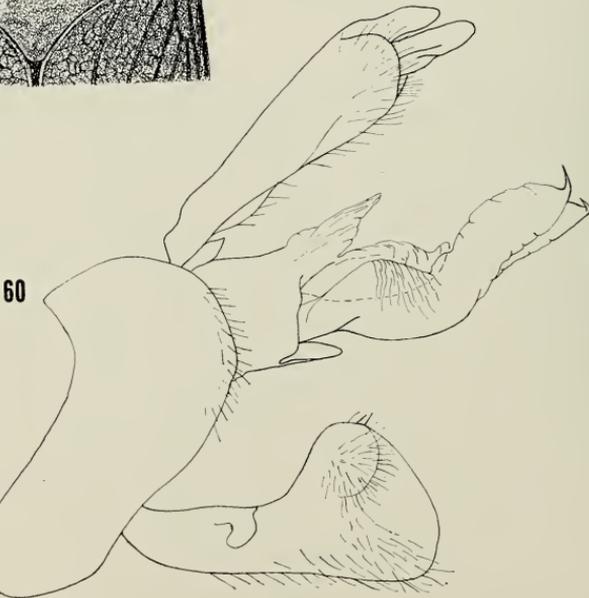
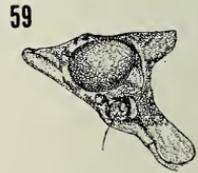
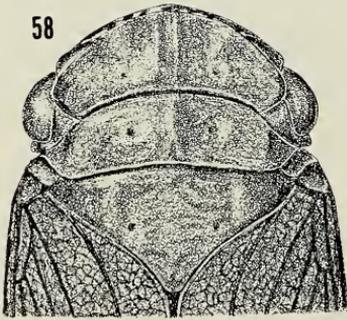
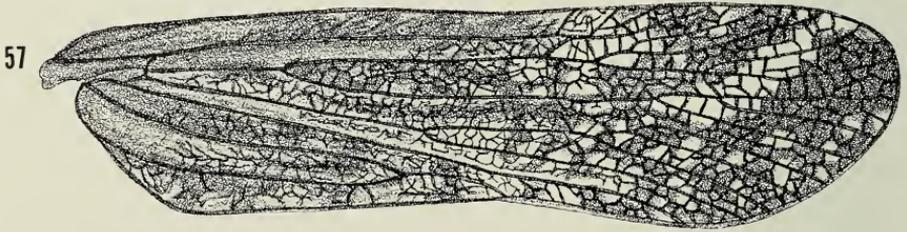
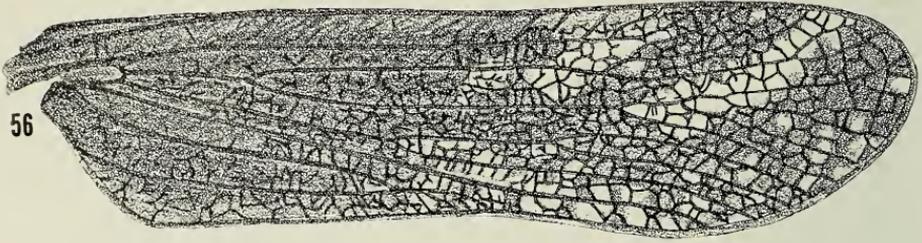
Records.—ARIZONA, Douglas, Madera Canyon, Nogales, Oracle, Portal, Redington, Sta. Catalina Mts., Tombstone, Tucson; TEXAS, Austin, Brownsville, Brownswood, Chisos Mts., Comstock, Davis Mts., Devil's River, Freer, Laredo, Port Isabel, Presidio, San Antonio, Uvalde. MEXICO: CHIHUAHUA, Camargo; SINALOA, Los Mochis. Total specimens studied: 42 males and 53 females.

Notes.—*C. vanduzeei* can be distinguished by the darkened midline of the crown coupled with the overall dark appearance and the relative small size. The holotype and type series were collected on *Muhlenbergia porteri* Scrib. or mesquite grass growing under spiny shrubs. Another plant from which specimens were taken is *Prosopis glandulosa* Torr, or mesquite. The planthopper is widely distributed from Arizona to southeastern Texas and adjacent parts of Mexico.

Cyrpoptus reinecke Van Duzee
(Figs. 56–61)

Cyrpoptus reinecke Van Duzee 1909:185.

Salient features.—Length of male 12–13.5 mm, females 11–14.5 mm. Crown triangularly produced but blunt at apex with longitudinal midlength greater than length next to eyes, surface longitudinally rugulose, longitudinal midline variably depressed; pronotum transversely rugulose, longitudinal midline variably carinate, carina behind each eye only partly developed (Fig. 58); mesonotum transversely rugulose; frons longitudinally rugulose with mesally broken, irregular, low ridge across middle; in lateral view (Fig. 59) frons nearly straight in oblique plane with slight convexity near antennal base; forewing in broad view (Figs. 56–57) without structural distinctions. Ground color stramineous to light brown; crown, pronotum, and mesonotum peppered with exceedingly minute red dots, sometimes these obsolete or obliterated by darker shading; impressions on pronotum and mesonotum dark; opaque basal portion of forewings dark red with cells usually darker, hyaline distal portion of forewings patterned with brown to leave transparent oblique vitta from costal margin in apical portion reaching to or beyond midline (Figs. 56–57); each hind wing at base scarlet to red with colored portion bordered distally with



brown; frons and thoracic pleura marked like crown; distal half of clypeus, legs, and abdominal venter variably mottled with brown to black.

Male genitalia.—Distinctive features: ventral lobes with extreme apices upturned as slender needlelike processes in lateral view (Fig. 60). In ventral view (Fig. 61) apices of ventral lobes crossed distally.

Type.—Lectotype here selected from Sanford, Florida, 27 April 1908, Van Duzee in California Academy of Sciences. This specimen was labeled by Van Duzee but his selection was never published.

Records.—ALABAMA, Mobile, Whistler; FLORIDA, Archbold Biological Station, Big Pine Key, Biscayne, Capron, Cedar Key, Clearwater, Cleveland, Coconut Grove, Crescent City, Dunedin, Enterprise, Estero, Gainesville, Grassy Key, Islamorada, Jacksonville, Key Largo, Key West, Lakeland, Lake Placid, Miami, Nokomis, Orlando, Punta Gorda, St. Augustine, St. Nicholas, St. Petersburg, Sanford, Sarasota, Seven Oaks, Stock Island, Tallahassee, Tampa, Venice; GEORGIA, Billy's Island in Okefenoke Swamp, Tifton; MISSISSIPPI, Gulfport, Long Beach, Lyman; SOUTH CAROLINA, Aiken, Charleston, Ridgeland; TEXAS, Boca Chica, La Marque. Total specimens studied: 103 males and 80 females.

Notes.—As indicated in the key to species, the markings of the distal portion of the forewings provide the best features for recognizing *reinecke*. This species is exceedingly common in Florida but apparently unusual elsewhere. Outside of Florida, the distribution appears to be limited to our coastal states of the Southeast. The plants from which specimens were collected include: *Melilotus alba* L., *Flaveria linearis* Lag., *Baccharis halimifolia* L. Lima beans, snap beans, and cotton. The specimens taken on cotton at Tifton, Ga. are extremely small males (9.5 mm) which are otherwise typical of the species.

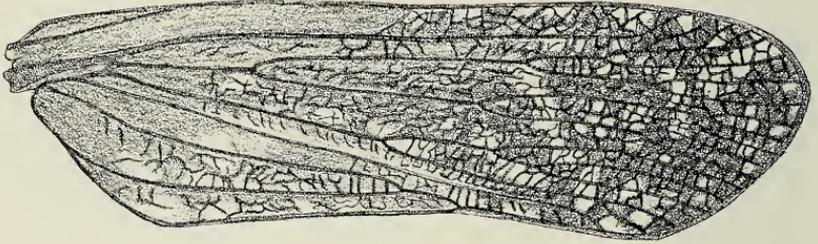
Cyrpoptus dubius Kramer, n. sp.
(Figs. 62–64)

Salient features.—Length of female 14.2 mm. Crown strongly produced triangularly with extreme apex bluntly angular, length at middle more than twice that next to eyes, surface longitudinally rugulose; pronotum transversely rugulose, longitudinal midline weakly carinate, carina behind each eye scarcely developed (Fig. 63); mesonotum transversely rugulose; frons weakly longitudinally rugulose, in lateral view (Fig. 64) long and barely concave with upper portion $1\frac{1}{2}\times$ width of eye; forewing in broad

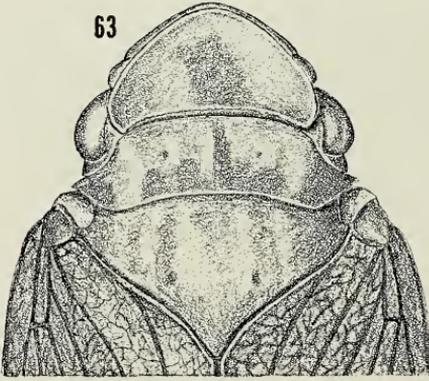
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Figs. 56–61. *Cyrpoptus reinecke* Van Duzee. 56 & 57. Forewings; 58. Anterior dorsum; 59. Head in lateral view; 60. Complete male genitalia in lateral view; 61. Aedeagus in ventral view.

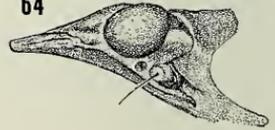
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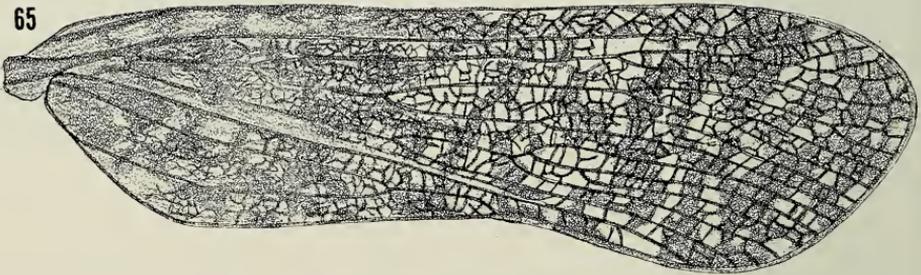
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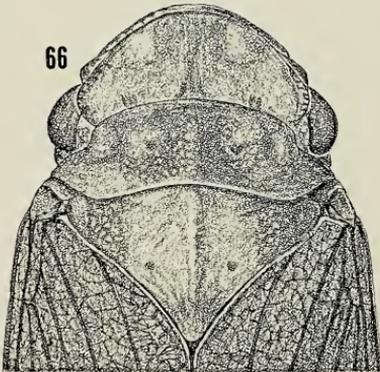
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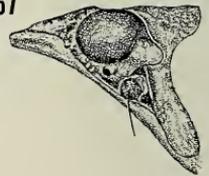
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66



67



view (Fig. 62) without structurally distinct features. Ground color sordid stramineous or light brown; crown, pronotum, and mesonotum lightly peppered with exceedingly minute red dots, these more distinct laterally than mesally; impressions on pronotum and mesonotum dark; opaque basal portion of forewings reddish with cells darker, hyaline distal portions of forewings heavily marked with brown to leave few scattered small round hyaline areas (Fig. 62); each hind wing at base orange with colored portion partly bordered with brown; frons and thoracic pleura marked like crown; distal half of clypeus, legs, and abdominal venter lightly mottled with brown or black.

Male genitalia.—Male unknown.

Type.—Holotype female Tehuantepec, Oaxaca, Mexico, 13 Dec. 1947–23 Jan. 1948, T. MacDougal in American Museum of Natural History.

Records.—Known only from type.

Notes.—The shape of the head, as noted in the key to species, provides the unique feature of the species. There is the possibility that this specimen represents an extreme example of *nubeculosus*, hence the name *dubius*. However, it seems necessary to consider it a distinct species at this time.

Cyrpoptus nubeculosus Stål

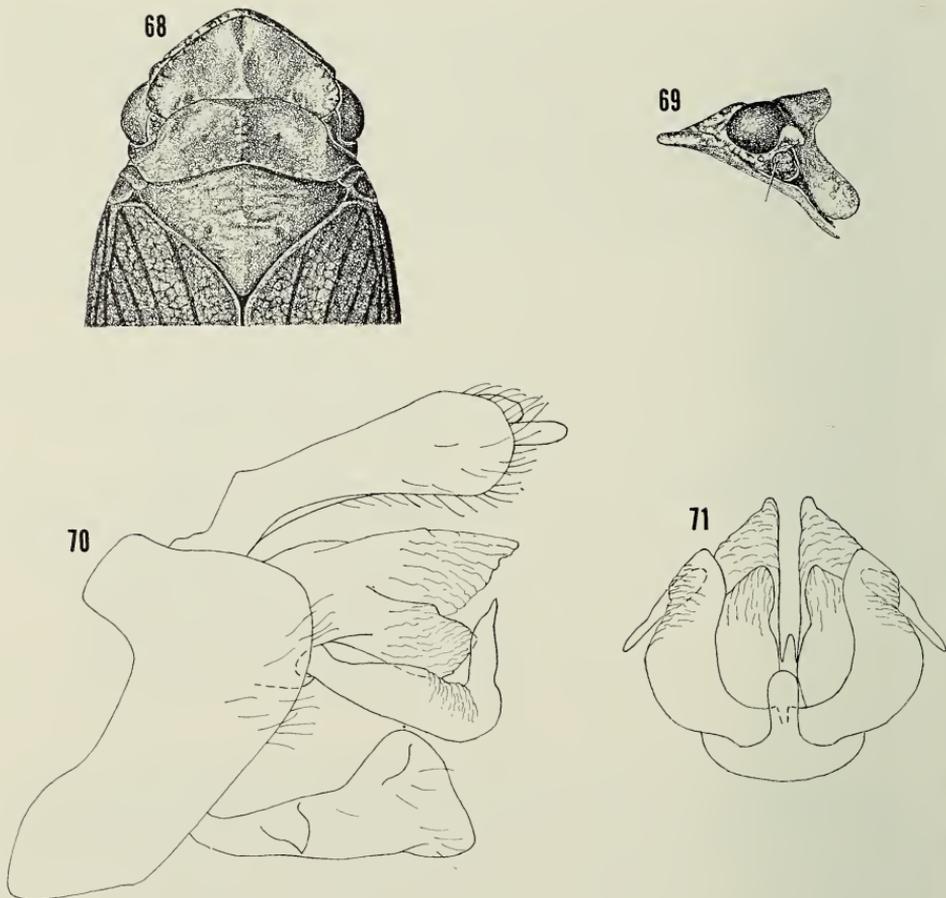
(Figs. 2, 65–79, 81–84)

Cyrpoptus nubeculosus Stål 1869:240.

Salient features.—Length of male 11–13.8 mm, female 13.8–15.5 mm. Crown triangularly produced but blunt at apex with longitudinal mid-length greater than length next to eyes, longitudinal midline sometimes mildly depressed; pronotum transversely rugulose, longitudinal midline weakly carinate, carina behind each eye only partly developed (Figs. 66, 68, 72, & 76); mesonotum transversely rugulose; frons longitudinally rugulose, in lateral view (Figs. 67, 69, 73, & 77) scarcely or not concave with contour regular; forewing in broad view (Fig. 65) somewhat convexly expanded beyond claval apex. Ground color brownish or stramineous; crown, pronotum, and mesonotum lightly or obscurely peppered with exceedingly minute red dots, these often obscured with darker shading; longitudinal midline of crown sometimes vaguely darkened; impressions on pronotum and mesonotum darkened or not; opaque basal portion of forewings dark red with cells variably darker, hyaline distal portion of fore-

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Figs. 62–67. *Cyrpoptus dubius*, n. sp. 62. Forewing; 63. Anterior dorsum; 64. Head in lateral view. *Cyrpoptus nubeculosus* Stål. 65. Forewing; 66. Anterior dorsum; 67. Head in lateral view.



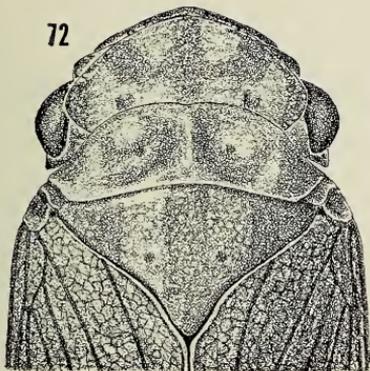
Figs. 68-71. *Cyrpoptus nubeculosus* Stål. 68. Anterior dorsum; 69. Head in lateral view; 70. Complete male genitalia in lateral view; 71. Aedeagus in ventral view.

wings patterned with brown as in Fig. 65; each hind wing at base orange or red-orange with colored portion partly bordered distally with brown; frons and thoracic pleura similar in color to that of crown; distal half of clypeus, legs, and abdominal venter variably mottled with brown or black.

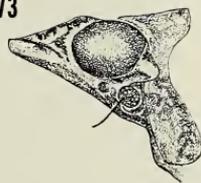
Male genitalia.—Distinctive features: ventral lobes with distal portion narrowed and porrect or slightly recurved in lateral view (Figs. 70, 74, 78, 81, & 83). In ventral or posterior view (Figs. 71, 75, 79, 82, & 84) apical portion of ventral lobes directed laterally or lateroventrally.

Type.—Lectotype female hereby selected has 7 labels "Mexico" and

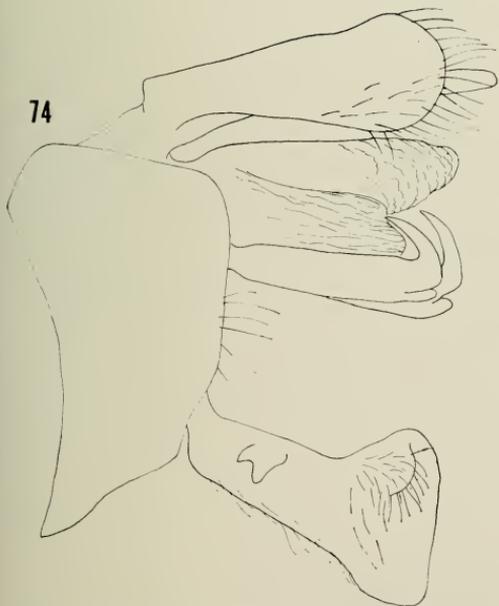
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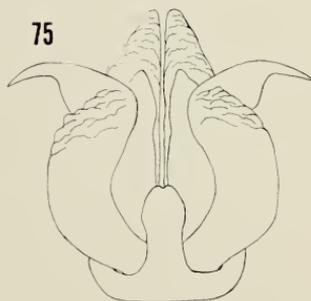
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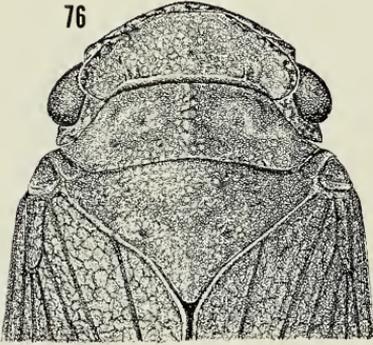
Figs. 72-75. *Cyrpoptus nubeculosus* Stål. 72. Anterior dorsum; 73. Head in lateral view; 74. Complete male genitalia in lateral view; 75. Aedeagus in posterior view.

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Figs. 76-80. *Cyrpoptus nubeculosus* Stål. 76. Anterior dorsum; 77. Head in lateral view; 78. Complete male genitalia in lateral view; 79. Aedeagus in posterior view. *Cyrpoptus obscurus* Metcalf; 80. Anterior dorsum.

Figs. 81-84. *Cyrpoptus nubeculosus* Stål. 81 & 83. Complete male genitalia in lateral view; 82 & 84. Aedeagus in posterior view.

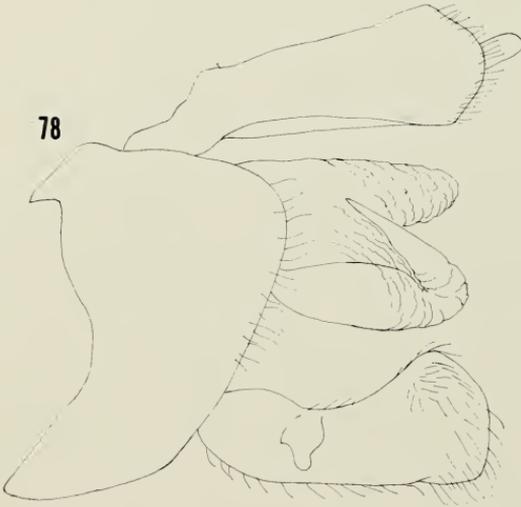
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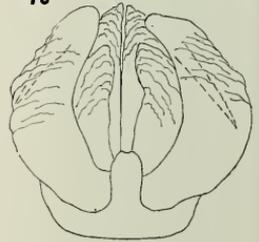
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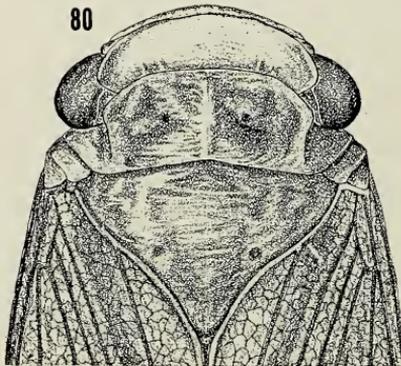
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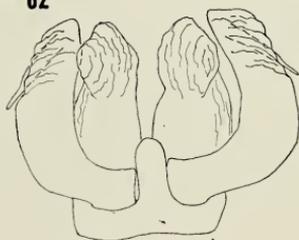
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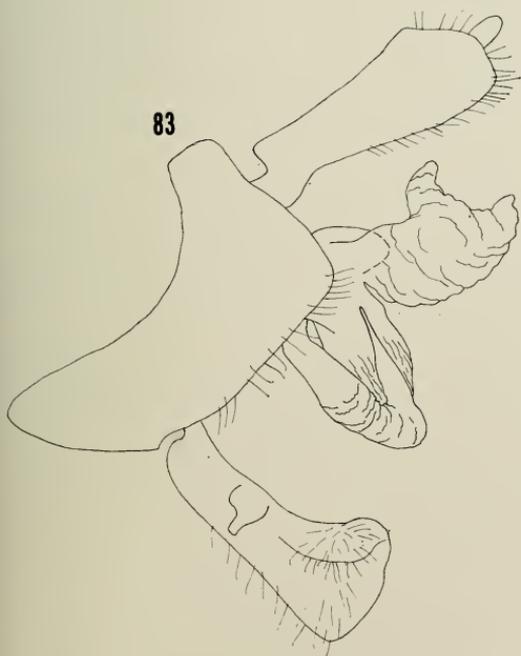
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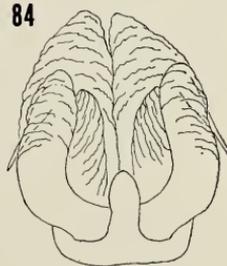
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83



84



"Salle" and "Typus" (red paper) and "Cyrproptus (sic) nubiculosus (sic)" and "454 63" (red paper) and "49 76" (red paper) and "Riksmuseum Stockholm" (green paper). The specimen is mounted with all wings spread. The tip of the left forewing is missing, and a small piece is gone from the right forewing on the anterior margin at the apex. There are three other conspecific specimens in the original series before me with labels similar to those of the lectotype: 2 males, one of which bears an allotype label (red paper) and the other not type designation, and one female with a paratype label (red paper). All of these specimens are in the Riksmuseum Stockholm.

Records.—ARIZONA, Atascosa Mts., Baboquivari Mts., Blanca Lake, Madrona Canyon, Naco, Sabino Canyon, Sta. Catalina Mts., Tucson; TEXAS, Austin, Brownsville, Devil's River, Laredo, Mathis, Uvalde, Val Verda. MEXICO: CAMPECHE, Campeche; Guerrero, Buena Vista; Morelos, Antiguo, Cuantla; NAYARIT, Tepic; NUEVO LEON, Linares, Monterrey; PUEBLA, Matamoros; SAN LUIS POTOSI, Tamazunchale; SONORA, Alamos; TLAXCALA, Lake Chapala; YUCATAN, UXMAL. Total specimens studied: 41 males and 36 females.

Notes.—The crown of *nubeculosus* tends to be longer than those of its congeners, except *dubius*, and males tend to have the extreme coronal apex less broadly rounded than in females. A few specimens have a vaguely darkened longitudinal midline on the crown and resemble *vanduzeei* in this character. However, the facial contour of the two species is quite different; in *vanduzeei* the facial contour is irregular (Fig. 50), and in *nubeculosus* it is smooth (Fig. 67). The nymph (Fig. 2) resembles the adult, but the frons and crown are clearly differentiated, the mesonotum poorly defined, and both the pronotum and mesonotal areas bear a few rounded sensoria. No host or food plants are recorded for this Mexican species which also occurs in our border states of Arizona and Texas.

Checklist of *Cyrproptus* spp. with General Distributional Data

1. *belfragei* Stål, 1869:240. Maryland to Kansas and south to Honduras.
2. *dubius* Kramer, n. sp. Mexico.
3. *ferruginosus* Stål, 1869:240. Mexico.
4. *metcalfi* Ball, 1933:147. SW U.S.A. and adjacent areas of Mexico.
5. *nubeculosus* Stål, 1869:240. SW U.S.A. and Mexico.
6. *obscurus* Metcalf, 1938:352. Canal Zone.
7. *obtusus* Valdes Ragues, 1910:442. Cuba.
8. *reinecke* Van Duzee, 1909:185. SE U.S.A.
9. *ruficrus* Kramer, n. sp. Cuba.
10. *suavis* Stål, 1862:305. Mexico south to Canal Zone.
11. *vanduzeei* Ball, 1933:146. SW U.S.A. and adjacent areas of Mexico.

Acknowledgments

Without the most generous cooperation of the persons and their institutions listed here, this study would not have been possible. To all of them I express my sincere thanks and deep gratitude for loans of specimens, types of all species, and other data vital to this study: Dr. Paul H. Arnaud, Department of Entomology, California Academy of Sciences, San Francisco; Dr. Frank W. Mead, Florida Collection of Arthropods, Gainesville; Dr. Lois B. O'Brien, Department of Entomology, Florida A&M University, Tallahassee; Dr. Per Inge Persson, Department of Entomology, Swedish Museum of Natural History, Stockholm; Dr. Randall T. Schuh, Department of Entomology, American Museum of Natural History, New York City; and Dr. David A. Young, Department of Entomology, North Carolina State University, Raleigh. Miss Linda A. Heath is due special recognition for her fine illustrations which appear throughout the revision.

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